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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,901	03/29/2004	Ueli Breitschmid	2360-0406P	1090

2292 7590 02/03/2009
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EXAMINER

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ART UNIT	PAPER NUMBER
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3723

NOTIFICATION DATE	DELIVERY MODE
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02/03/2009

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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/810,901
Filing Date: March 29, 2004
Appellant(s): BREITSCHMID, UELI

Mr. Charles Gorenstein
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 08 August 2008 appealing from the Office action mailed 30 October 2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

EPO 0 800 781 A2	TSURUKAWA	10-1997
Japan 08-308637	HITOSHI	11-1996

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4, 6, 9, 14 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by EPO 0 800 781 A2 (hereinafter EPO '781).

As for claim 1, the EPO '781 reference discloses an interdental brush comprising two wire sections formed of austenitic steel and having a diameter of 0.3 mm or less (p. 3, lines 21-22 and 27-28, for example), and filaments retained between the two wire sections which are twisted with one another (Figs. 1-3; p. 2, lines 5-8), wherein the austenitic steel includes less than 0.05% nickel by weight. It should be noted here that the claimed limitation "less than 0.05% nickel by weight" (claim 1, line 4) could just mean or include 0 (i.e., zero). Specifically, EPO '781 teaches in "first," "second," and "third" aspects of the invention (p. 2, line 54 to p. 3, line 8) examples where **nickel has not been included** in the austenitic steel wire composition thus meeting the broad claimed limitation "less than 0.05% nickel by weight" since such quoted recitation could include or just mean 0 (i.e., zero). In these first three aspects of the invention, EPO '781 explicitly recites that the brush wire contains "**at least** iron, chromium, manganese and

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nitrogen” (emphasis added) and the nickel amount would be 0 wt% (i.e., zero) since nickel has not been included as a material here. Therefore, nickel is never required in the composition for the brush wire in these first three specific aspects of the invention. Note, however, in **subsequent** aspects of the invention (e.g., “fourth,” “fifth,” “sixth,” “seventh,” “eighth,” etc. on p. 3, lines 9-51), nickel is included in the brush wire composition. Further, claims 1-3 of EPO ‘781 similarly teaches the brush wire which is void of any nickel material. Further, the fact that **nickel** has never been explicitly mentioned in the recited composition of steel wire for the first, second and third aspects of the invention is an indication that *even if nickel* were present in such composition, **such nickel amounts would be so minimal or infinitesimal and so close to zero as to render nickel not worthy of mention or of nil effect** in these first, second and third aspects of the invention.

Alternatively with respect to claim 1, EPO ‘781 teaches specifically in “sixth” and “seventh” aspects of the invention, for example, that the brush wire has a nickel content less than 1.0 wt% or an amount of not more than 1.0 wt% (p. 3, lines 20-32) which is deemed to anticipate the limitation in claim 1 reciting “less than 0.05% nickel by weight” with “sufficient specificity” (see MPEP 2131.03 II.).

As for claim 2, EPO ‘781 teaches a wire diameter of 0.15 to 0.35 mm (p. 3, lines 27-28, for example) and which meets the limitation of the two wire sections having a diameter of more than 0.15 mm.

As for claims 1, 4 and 9, EPO ‘781 is concerned with providing adequate tensile strength to the wires to improve mechanical properties and avoid breakage (p. 2, lines

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38-40 and 46-48 and p. 8, lines 8-15, for example) where example wires have tensile strengths of 112.2 kgf/mm², 91.6 kgf/mm², 76.4 kgf/mm² (Table 3) which meet the claimed limitations of “1000 N/mm² or more” or “1200 N/mm² or less”.

As for claim 6, 14 and 16 reciting that the wire sections are stretched or drawn out, such recitation is deemed drawn to a method step not germane to patentability in apparatus claims. In any case, EPO ‘781 teaches in Fig. 3, stretching or drawn out steps for the wire sections in the process of manufacturing.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 4, 6, 9, 14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over EPO ‘781.

As previously explained above, EPO ‘781 discloses an interdental brush comprising two wire sections formed of austenitic steel and having a diameter of 0.3 mm or less (p. 3, lines 21-22 and 27-28, for example), and filaments retained between the two wire sections which are twisted with one another (Figs. 1-3; p. 2, lines 5-8).

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Even assuming arguendo that the EPO '781 disclosures "nickel content is less than 1.0 wt%" or "in an amount of not more than 1.0 wt%" fail to teach with "sufficient specificity" (in accordance with MPEP 2131.03 II.) that the austenitic steel includes "less than 0.05% nickel by weight", EPO '781 specifically teaches in "first," "second," and "third" aspects of the invention (p. 2, line 54 to p. 3, line 8) examples where **nickel has not been included** in the brush wire composition. Here, in these first three aspects of the invention, EPO '781 explicitly recites that the brush wire contains "**at least**" iron, chromium, manganese and nitrogen (emphasis added) and therefore, the nickel content would be 0 wt% (i.e., zero) since nickel has not been listed as a material in the wire composition. Therefore, **nickel is never required** in the composition for the brush wire and is deemed to have a nickel content of 0 (i.e., zero) here. In contrast, in subsequent "aspects" of the invention (e.g., "sixth," "seventh," etc. on p. 3, lines 20-51), **nickel is included** in the wire composition in an amount less than 1.0 wt% or an amount not more than 1.0 wt%. Therefore, it would have been obvious to one of ordinary skill in the art to have modified EPO '781 by providing an amount of nickel in the brush wire **anywhere from 0 wt% (i.e., zero) all the way up to 1.0 wt %** (since EPO '781, as already stated, teaches examples where nickel is never included in the wire composition and also teaches examples including nickel in an amount less than 1.0 wt % **and therefore, "0.05% nickel by weight" would be included or encompassed by this range**) in order to provide optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features, etc. and thus only the expected results would be obtained. One of ordinary skill in the art would recognize that

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the rather broad claimed limitation "less than 0.05% nickel by weight" could mean just 0 (i.e., zero) or some other very small value very close or near to 0 (i.e., zero) such as the claimed 0.05% wt value. Thus, the "less than 0.05% nickel by weight" limitation would be obvious to one of ordinary skill since EPO '781 already teaches two endpoints of a range for nickel content, i.e., zero and 1.0 wt%, in order to provide predictable results and optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features, etc.

Further, absent any crucial unexpected results or criticality for the **specific claimed limitation "less than 0.05% nickel by weight"**, such claimed limitation is deemed met by EPO '781 as already explained. The specification is devoid of any significant criticality or unexpected results for the specific claimed limitation "less than 0.05% nickel by weight".

As for claim 2, EPO '781 teaches a wire diameter of 0.15 to 0.35 mm (p. 3, lines 27-28, for example) and which meets the limitation of the two wire sections having a diameter of more than 0.15 mm.

As for claims 1, 4 and 9, EPO '781 is already concerned with providing adequate tensile strength to the wires to improve mechanical properties and avoid breakage (p. 2, lines 38-40 and 46-48 and p. 8, lines 8-15, for example) where example wires have tensile strengths of 112.2 kgf/mm², 91.6 kgf/mm², 76.4 kgf/mm² (Table 3) which meet the claimed limitations of "1000 N/mm² or more" or "1200 N/mm² or less". In any case, it would have been obvious to one of ordinary skill in the art to have optimized the tensile strength range of the two wire sections as claimed since it has been held that

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discovering an optimum value of a result effective variable involves only routine skill in the art. Further, only reasonable expected results would be obtained. Moreover, the EPO '781 reference specifically recites that the interdental brush wire has high mechanical properties of the wire such as tensile strength and that the properties are well balanced and improved in terms of hardness, spring properties and workability as well as durability against buckling or break which are required for interdental brush wire (see p. 4, lines 7-12 and p. 16, lines 27-32). Also, a clear goal or object of the invention for EPO '781 is to improve tensile strength and buckling strength (p. 2, lines 30-40, for example). Thus, one of ordinary skill in the art would recognize a reasonable expectation of success by selecting the tensile strength range as claimed.

As for claim 6, 14 and 16 reciting that the wire sections are stretched or drawn out, such recitation is deemed drawn to a method step not germane to patentability in apparatus claims. In any case, EPO '781 teaches in Fig. 3 stretching or drawn out steps for the wire sections during manufacturing since they are processed as is shown.

5. Claims 18-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over EPO '781 in view of Japan 08-308637 (hereinafter Japan '637).

In order to avoid redundancy, all of the Examiner's reasoning and explanations based on EPO '781 above are being incorporated herein for purposes of rejecting claim 18. With the exception of specific elements within the austenitic steel now being claimed, claim 18 is similar to claim 1. EPO '781 teaches among the disclosed "aspects" or embodiments of the invention all of the claimed elements of the austenitic steel (i.e.,

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manganese, nitrogen, carbon, chromium, molybdenum, silicon, phosphorus, iron, and nickel; see p. 2, line 49 to p. 3, line 51) in some combination or another with the exception of titanium. The reference to Japan '637 teaches an interdental brush which can include a titanium nickel element for the austenitic steel. It would have been obvious to one of ordinary skill in the art to have modified the EPO '781 interdental brush such that the austenitic steel contains all of the typical claimed elements, i.e., manganese, nitrogen, carbon, chromium, molybdenum, silicon, phosphorus, iron, nickel, and titanium as taught by Japan '637, since **all of these elements are well known in the art and are commonly utilized in austenitic steel for interdental brushes** and all contribute to optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features and only expected or predictable results would be obtained.

As for claim 18, EPO '781 is already concerned with providing adequate tensile strength to the wires to improve mechanical properties and avoid breakage (p. 2, lines 38-40 and 46-48 and p. 8, lines 8-15, for example) where example wires have tensile strengths of 112.2 kgf/mm², 91.6 kgf/mm², 76.4 kgf/mm² (Table 3) which meet the claimed limitations of "1000 N/mm² or more" or "1200 N/mm² or less". In any case, it would have been obvious to one of ordinary skill in the art to have optimized the tensile strength range of the two wire sections as claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Further, only reasonable expected results would be obtained. Moreover, the EPO '781 reference specifically recites that the interdental brush wire has high

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mechanical properties of the wire such as tensile strength and that the properties are well balanced and improved in terms of hardness, spring properties and workability as well as durability against buckling or break which are required for interdental brush wire (see p. 4, lines 7-12 and p. 16, lines 27-32). Also, a clear goal or object of the invention for EPO '781 is to improve tensile strength and buckling strength of the wires (p. 2, lines 30-40, for example). Thus, one of ordinary skill in the art would recognize a reasonable expectation of success by selecting the specific tensile strength range as claimed.

Note, EPO '781 teaches in the specification at p. 2, line 49 to p. 3, line 51, for example, and in Tables 1 and 2 the various claimed elements and their percentages by weight. As for the specific percentages by weight in proportion of chromium, manganese, nitrogen, molybdenum, carbon, silicon, phosphorus, and titanium in the steel being specifically recited in claims 19 through 29, one of ordinary skill in the art would find it obvious to select optimal weight percentages relating to mechanical properties such as tensile strength, stability, processing, prolonged life and usage, nontoxic features, etc. **All of the recited elements are already known to be used in austenitic steel, more particularly, in interdental wire brushes as taught by EPO '781 and Japan '637.** Further, absent any crucial unexpected results or criticality for these specific percentages by weight in proportion, such claimed limitations are deemed met by EPO '781 and Japan '637. Further, there is no indication of any criticality or unexpected results for these known elements used in the austenitic steel, other than a mere laundry list of these commonly utilized elements, in their specifically claimed

percentages or proportions in claims 18 through 29 or in the specific combination of elements recited in claim 18.

(10) Response to Argument

Appellant argues that the single prior art reference to EPO '781 fails to teach each and every claimed feature and therefore fails to anticipate the claimed invention of claim 1. Appellant primarily argues that although many variations of stainless steels are disclosed by EPO '781, EPO '781 specifically selects as a "new alloy," the alloy corresponding to the **seventh** aspect of the invention (see bottom paragraph at page 7) as a preferred alloy for an interdental brush of the invention. Appellant does acknowledge that EPO '781 also describes first, second and third aspects of the invention, however, appellant stresses mostly that this "new alloy," corresponding to the seventh aspect of the invention, has been selected by EPO '781 as the representative alloy for the interdental brush. Appellant points out that this "new alloy" has chemical compositions as shown in Table 2 that were measured for their mechanical properties and evaluated for their performance as a brush. Appellant points out that the example chemical composition shown in Table 2 shows that the lowest nickel content is a nickel content of 0.52% by weight and Appellant submits that this "new alloy" disclosed in EPO '781 selected as the alloy for an interdental brush has a nickel content of ten times the percent by weight required by the claimed invention. Therefore, appellant asserts, EPO '781 fails to teach the claimed limitation of "less than 0.05% nickel by weight."

Appellant also argues that EPO '781 fails to also teach that the wire sections have a tensile strength of 1000 N/mm² or more or 1200 N/mm² or less since the value of 40 kgf/mm pertains to proof stress and not tensile strength. Appellant asserts that EPO '781 does not adequately discuss tensile strength much less teach the specific tensile strength as set forth in claims 1, 4 and 9.

Appellant also argues that the two wire sections that are "stretched" and "drawn out" are products that are stiffer than those which have not been processed. Appellant submits that EPO '781 fails to disclose wire sections that have been stretched and drawn out as set forth in claims 6, 14 and 16.

It is the examiner's position that EPO '781 teaches each and every claimed limitation as set forth in claim 1. Notwithstanding the fact that in EPO '781 the seventh aspect of the invention may define an exemplary "new alloy" with a nickel content of 0.52% by weight (Table 2), such fact does not take away from the fact that EPO '781 **also discloses at least nine (9) other aspects of the invention (p. 2, line 54 to p. 3, line 51), more specifically what has been disclosed by the first, second and third aspects of the invention.** As already explained in detail in the above 35 U.S.C. 102 anticipation rejection, EPO '781 teaches in "first," "second," and "third" aspects of the invention (p. 2, line 54 to p. 3, line 8) examples where **nickel has never been included** in the austenitic steel wire composition thus meeting the broad claimed limitation "less than 0.05% nickel by weight" **since such quoted and claimed recitation could include or just mean 0 (i.e., zero).** In these first three aspects of the invention, EPO '781 explicitly recites that the brush wire contains "**at least** iron, chromium, manganese

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and nitrogen” (emphasis added) and the nickel amount would be 0 wt% (i.e., zero) since nickel has not been included as a material here and has been left out. Therefore, **nickel is never required** in the specific composition for the brush wire in these first three specific aspects of the invention. Note, however, in **subsequent** aspects of the invention (e.g., “fourth,” “fifth,” “sixth,” “seventh,” “eighth,” etc. on p. 3, lines 9-51), **nickel is included** in the brush wire composition. Further, claims 1-3 of EPO ‘781 similarly teaches the brush wire which is **void of any nickel material**. Further, the fact that **nickel** has never been explicitly mentioned in the recited composition of steel wire for the first, second and third aspects of the invention is an indication that *even if nickel* were present in such composition, **such nickel amounts would be so minimal or infinitesimal and so close to zero as to render nickel not worthy of mention or of nil effect in these first, second and third aspects of the invention**. Moreover, appellant has not adequately or sufficiently showed that nickel *is* inherently present in the first, second and/or third aspects of invention as laid out in EPO ‘781.

As for appellant’s argument that EPO ‘781 fails to adequately teach the specific claimed tensile strength ranges set forth in claims 1, 4 and 9, EPO ‘781 *is* concerned with providing adequate tensile strength to the wires to improve mechanical properties and avoid breakage (p. 2, lines 38-40 and 46-48 and p. 8, lines 8-15, for example) where example wires have tensile strengths of 112.2 kgf/mm², 91.6 kgf/mm², 76.4 kgf/mm² (Table 3) which are deemed to meet the claimed limitations of “1000 N/mm² or more” or “1200 N/mm² or less”.

As for claim 6, 14 and 16 reciting that the wire sections are stretched or drawn out, EPO '781 teaches in Fig. 3 stretching or drawn out steps for the wire sections in the during manufacturing since they are processed as is shown. Furthermore, it is noted that the features upon which applicant relies (i.e., that the wire sections are stiffer than those not processed) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As for the examiner's 35 U.S.C. 103 rejection based solely on EPO '781, appellant's arguments here are basically redundant of those arguments previously presented by appellant for the anticipation rejection above.

Even assuming arguendo that the EPO '781 disclosures "nickel content is less than 1.0 wt%" or "in an amount of not more than 1.0 wt%" fail to teach with "sufficient specificity" (in accordance with MPEP 2131.03 II.) that the austenitic steel includes "less than 0.05% nickel by weight", EPO '781 specifically teaches in "first," "second," and "third" aspects of the invention (p. 2, line 54 to p. 3, line 8) examples where **nickel has not been included** in the brush wire composition. Here, in these first three aspects of the invention, EPO '781 explicitly recites that the brush wire contains "**at least**" iron, chromium, manganese and nitrogen (emphasis added) and therefore, the nickel content would be 0 wt% (i.e., zero) since nickel has not been listed as a material in the wire composition. Therefore, **nickel is never required** in the composition for the brush wire and is deemed to have a nickel content of 0 (i.e., zero) here. In contrast, in subsequent "aspects" of the invention (e.g., "sixth," "seventh," etc. on p. 3, lines 20-51), **nickel is**

included in the wire composition in an amount less than 1.0 wt% or an amount not more than 1.0 wt%. Therefore, it would have been obvious to one of ordinary skill in the art to have modified EPO '781 by providing an amount of nickel in the brush wire **anywhere from 0 wt% (i.e., zero) all the way up to 1.0 wt %** (since EPO '781, as already stated, teaches examples where nickel is never included in the wire composition and also teaches examples including nickel in an amount less than 1.0 wt % and therefore, "0.05% nickel by weight" would be included or encompassed by this range) in order to provide optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features, etc. and thus only the expected results would be obtained. One of ordinary skill in the art would recognize that the rather broad claimed limitation "less than 0.05% nickel by weight" could mean just 0 (i.e., zero) or some other very small value very close or near to 0 (i.e., zero) such as the claimed 0.05% wt value. Thus, the "less than 0.05% nickel by weight" limitation would be obvious to one of ordinary skill since EPO '781 already teaches two endpoints of a range for nickel content, i.e., zero and 1.0 wt%, in order to provide predictable results and optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features, etc.

Further, absent any crucial unexpected results or criticality for the **specific claimed limitation "less than 0.05% nickel by weight"**, such claimed limitation is deemed met by EPO '781 as already explained. The specification is devoid of any significant criticality or unexpected results for the specific claimed limitation "less than 0.05% nickel by weight".

As for the specific claimed tensile strength ranges recited in claims 1, 4 and 9, even assuming *arguendo* that the specific claimed ranges of “1000 N/mm² or more” or “1200 N/mm² or less” were not met by EPO ‘781, it still would have been obvious to one of ordinary skill in the art to have optimized the tensile strength range of the two wire sections as claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Further, only reasonable expected results would be obtained. Moreover, the EPO ‘781 reference specifically recites that the interdental brush wire has high mechanical properties of the wire such as tensile strength and that the properties are well balanced and improved in terms of hardness, spring properties and workability as well as durability against buckling or break which are required for interdental brush wire (see p. 4, lines 7-12 and p. 16, lines 27-32). Also, a clear goal or object of the invention for EPO ‘781 is to improve tensile strength and buckling strength of the wires (p. 2, lines 30-40, for example). Thus, one of ordinary skill in the art would recognize a reasonable expectation of success by selecting the specific tensile strength range as claimed.

As for claim 6, 14 and 16 reciting that the wire sections are stretched or drawn out, EPO ‘781 teaches in Fig. 3 stretching or drawn out steps for the wire sections in the during manufacturing since they are processed as is shown. Furthermore, it is noted that the features upon which applicant relies (i.e., that the wire sections are stiffer than those not processed) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As for the 35 U.S.C. 103 rejection based upon EPO '781 in view of Japan '637, appellant's arguments here for claims 18 and 29 are basically redundant of those arguments previously presented by appellant for the rejections above. Again, with the exception of specific elements within the austenitic steel now being recited in claim 18, EPO '781 teaches among the disclosed "aspects" or embodiments of the invention all of the claimed elements of the austenitic steel (i.e., manganese, nitrogen, carbon, chromium, molybdenum, silicon, phosphorus, iron, and nickel; see p. 2, line 49 to p. 3, line 51) in some combination or another with the exception of titanium. The reference to Japan '637 teaches an interdental brush which can include a titanium nickel element for the austenitic steel. It would have been obvious to one of ordinary skill in the art to have modified the EPO '781 interdental brush such that the austenitic steel contains all of the typical claimed elements, i.e., manganese, nitrogen, carbon, chromium, molybdenum, silicon, phosphorus, iron, nickel, and titanium as taught by Japan '637, since **all of these elements are well known in the art and are commonly utilized in austenitic steel for interdental brushes** and all contribute to optimal mechanical properties for the brush wire in terms of tensile strength, stability, prolonged life and usage, nontoxic features and only expected or predictable results would be obtained. It should be noted that the secondary reference to Japan '637 has been merely applied to teach that **titanium** could be included as an element within austenitic steel for an interdental brush. The fact that there may be a high/higher nickel content in the secondary reference to Japan '637 is not deemed patentably relevant here as the claimed nickel range has been deemed already met and addressed by the primary reference to EPO

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'781. As for the specific percentage by weight in proportion of titanium in the steel being specifically recited in claim 29, one of ordinary skill in the art would find it obvious to select an optimal weight percentage relating to mechanical properties such as tensile strength, stability, processing, prolonged life and usage, nontoxic features, etc.

As for tensile strength as recited in claim 18, EPO '781 is already concerned with providing adequate tensile strength to the wires to improve mechanical properties and avoid breakage (p. 2, lines 38-40 and 46-48 and p. 8, lines 8-15, for example) where example wires have tensile strengths of 112.2 kgf/mm², 91.6 kgf/mm², 76.4 kgf/mm² (Table 3) which meet the claimed limitations of "1000 N/mm² or more" or "1200 N/mm² or less". In any case, it would have been obvious to one of ordinary skill in the art to have optimized the tensile strength range of the two wire sections as claimed since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. Further, only reasonable expected results would be obtained. Moreover, the EPO '781 reference specifically recites that the interdental brush wire has high mechanical properties of the wire such as tensile strength and that the properties are well balanced and improved in terms of hardness, spring properties and workability as well as durability against buckling or break which are required for interdental brush wire (see p. 4, lines 7-12 and p. 16, lines 27-32). Also, a clear goal or object of the invention for EPO '781 is to improve tensile strength and buckling strength of the wires (p. 2, lines 30-40, for example). Thus, one of ordinary skill in the art would recognize a reasonable expectation of success by selecting the specific tensile strength range as claimed.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Randall Chin/

Primary Examiner, Art Unit 3723

Conferees:

/Joseph Hail/, SPE Art Unit 3723

/Boyer Ashley/, SPE Art Unit 3724

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